

U.S. Patent Application Serial No. **09/492,373**

Response dated August 8, 2003

Reply to OA of **April 9, 2003**

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): Ink comprising:

a primary particle of a copolymer that has a glass transition point less than or equal to 45 °C, a softening point measured by a flow tester ranging from 40 through 150 °C and a volume average particle diameter ranging from 0.01 through 2 μm obtained from a radical polymeric monomer composition consisting essentially of:

(a) 40 through 80 wt% of styrene;

(b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

(c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride;

a colorant; and

a solvent that is liquid at room temperature.

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wherein the primary particle of the copolymer is prepared by a polymerization process selected from the group consisting of an emulsion polymerization, a micro emulsion polymerization and a soap-free polymerization.

2. (Canceled)

3. (Canceled)

4. (Previously Amended): The ink according to claim 1, wherein said copolymer has a glass transition point ranging from -30 through 45 °C.

5. (Canceled)

6. (Original): The ink according to claim 1, wherein said colorant comprises one selected from the group consisting of a pigment and a dye, and said colorant is dissolved or dispersed in said primary particle of a copolymer.

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7. (Original): The ink according to claim 1, wherein said colorant comprises one selected from the group consisting of a pigment and a dye, and said colorant is absorbed on or coats a surface of said copolymer.

8. (Original): The ink according to claim 1, wherein said colorant comprises one selected from the group consisting of a pigment and a dye, and said colorant is dissolved or dispersed in said solvent.

9. (Original): The ink according to claim 1, wherein said copolymer is included at 1 through 50 wt%.

10. (Original): The ink according to claim 1, wherein said colorant is included at 0.1 through 20 wt%.

11-13. (Canceled)

14. (Currently Amended): Ink comprising:

a copolymer particle that has a glass transition point less than or equal to 45 °C, a softening point measured by a flow tester ranging from 40 through 150°C and a volume average particle diameter ranging from 0.01 through 2 μ m obtained from a radical polymeric monomer composition consisting essentially of:

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(a) 40 through 80 wt% of styrene;

(b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

(c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride;

a colorant; and

a solvent that is liquid at room temperature,

wherein the primary particle of the copolymer is prepared by a polymerization process selected from the group consisting of an emulsion polymerization, a micro emulsion polymerization and a soap-free polymerization.

15. (Original): The ink according to claim 14, further comprising a surfactant covering a surface of said copolymer particle.

16. (Currently Amended): An ink cartridge including a case and ink which is stored in said case and comprises:

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a copolymer particle that has a glass transition point less than or equal to 45°C, a softening point measured by a flow tester ranging from 40 through 150°C and a volume average particle diameter ranging from 0.01 through 2 μm obtained from a radical polymeric monomer composition consisting essentially of:

(a) 40 through 80 wt% of styrene; and

(b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

(c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride;

a colorant; and

a solvent that is liquid at room temperature,

wherein the primary particle of the copolymer is prepared by a polymerization process selected from the group consisting of an emulsion polymerization, a micro emulsion polymerization and a soap-free polymerization.

17. (Currently Amended): A recording device including a head and an ink cartridge supplying ink to said head, wherein said ink comprises:

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a copolymer particle that has a glass transition point less than or equal to 45 °C, a softening point measured by a flow tester ranging from 40 through 150 °C and a volume average particle diameter ranging from 0.01 through 2 μm obtained from a radical polymeric monomer composition consisting essentially of:

(a) 40 through 80 wt% of styrene; and

(b) 10 through 80 wt% of alkyl acrylate or alkyl methacrylate; and

(c) 5 through 10 wt% of polymeric monomer including a polar group, the polymeric monomer including a polar group selected from the group consisting of acrylic acid, methacrylic acid, 2-hydroxypropyl-N, N, N-trimethylammonium chloride acrylate, vinylpyridine and N, N-diallylmethylammonium chloride;

a colorant; and

a solvent that is liquid at room temperature,

wherein the primary particle of the copolymer is prepared by a polymerization process selected from the group consisting of an emulsion polymerization, a micro emulsion polymerization and a soap-free polymerization.

18. (Previously Amended): A recording device according to claim 17, wherein said head is an inkjet head using a piezoelectric element.